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*flata*, *Calamintha Clinopodium*, besides numerous ferns and other plants, which, however, have already been credited to this part of Michigan in Wheeler and Smith's catalogue. Near the water works, east of the city, *Zizania aquatica* grew among millions of *Wolffia Columbiana*, interspersed with *Lemna trisulca* and *L. polyrrhiza*, which the catalogue indicates as growing throughout Southern Michigan. *Sonchus oleraceus* was represented by a few stray individuals; also *Polygonum Pennsylvanicum* and *P. incarnatum*. Among the more common weeds may be mentioned *Cichorium Intybus* and *Atriplex patula*, var. *hastata*, both of which are found in unusual abundance throughout the city. Along the railroads *Eriogonum fasciculatum*, var. *muricata*, *Diplopappus umbellatus* and *Cenchrus tribuloides*, were well represented, the last plant very troublesome to the collector. A few other plants may be mentioned, which were found north of the city; *Solidago ulmi-folia*, *Rudbeckia speciosa*, *Lactuca leucophæa*, *Spiranthes Romanzoviana*, *Botrychium ternatum*, var. *obliquum* and var. *dissectum*. The flowers of the *Spiranthes* wind in three ranks about the stem, but they are so arranged as to form 4 vertical rows in each spike. I also observed that young individuals were developed from the axils of the lower leaves, which I suppose furnish a means of propagation to the plant, it being well known that most orchids are slow to seed, requiring the agency of insects in securing fertilization. Proliferous specimens of *Scirpus atrovirens* were frequently seen in the fall.

Fungi were rather scarce. However, the species found were abundantly represented. Among these were *Scleroderma vulgare*, *Geaster triplex*, Jungh., *Bovista plumbea*, Pers., *Cyathus striatus*, Hoffm., *Boletus castaneus*, Bull., *Agaricus confluens*, Pers., and *Agaricus radicans*, Bull.—AUG. F. FOERSTE, Dayton, Ohio.

### Notulæ Californicæ.

The plant commonly known as German ivy (*Senecio mikanioides*, Otto) acts much as if it could become naturalized in California; though thus far one does not see it growing wild except along streams, and in places where its shoots may have found a lodgment after having been thrown away with the refuse of the gardens. But it is already of quite frequent occurrence in the ravines back of Oakland and Berkeley, where it flowers regularly and profusely shortly after Christmas.

Its dense masses of yellow bloom, upon the background of the dark foliage of live oak and bay over which it climbs, give a warm and cheerful look, at this season when flowers are few.

Owing to the climatic peculiarities of the past winter the common deciduous shrub, *Neillia opulifolia*, Benth. & Hook., will have shed its foliage twice in 1883. Its habit is, in this region, to put

them forth in the month of March, and mature and cast them off in September. But last autumn we were visited by very early and continuous rains, accompanied by warm weather; insomuch that this particular shrub in November unfolded its new leaves, and showed its flower buds. By the beginning of January, when the flowers had appeared, there came suddenly a very marked change in the temperature. The frosts killed the flowers; but the young leaves, barely full grown, seemed uninjured; but as late as February they turned red, and fell, as they are wont to do in autumn. Now, in the middle of March, they are appearing again, as boldly and vigorously as if nothing unusual had happened.

It is remarkable that no other of the ten or fifteen species of deciduous shrubs, inhabiting these same banks, were similarly affected by the season. *Ribes Menziesii*, Pursh, which is about the earliest to respond to the call of spring, and also the earliest to drop its foliage, remained wholly unmoved by the extraordinary vernal influences of last October and November, and is now in flower at its usual date; and the same is true of all the rest, with the single exception of *Symphoricarpus racemosus*, Michx. This shrub unfolded its leaves in November; but the subsequent frosts neither killed, nor yet matured them; their growth was only temporarily checked; and although it was for two months, they have lately attained their full size, and the shrub will flower at its usual time.

Of *Anthemis Cotula*, L., it is said in Bot. Cal. I. 401, that it is "sparingly found along roadsides: introduced, but not yet common." That was six or seven years ago; and now it is fairly abundant—too much so—whitening not only waysides, but waste grounds everywhere almost on the east side of San Francisco Bay. Moreover, like death, it has all seasons for its own, in California, for it may be found in flower every month in the year.

Although I have seen no specimens, I have it from two authorities which I deem wholly unquestionable, that the common foxglove (*Digitalis purpurea*) is not only thoroughly naturalized, but abundant far inland, in the country back of Humboldt Bay.

The most interesting waif which I have detected in the San Francisco region is a *Hemizonia*, one of the tarweeds, peculiar to this coast, which I found in a single specimen, on the Oakland pier in the summer of 1881. Being wholly distinct from all the species of its genus known to me, I made specimens, preserving every branch of the single, large plant; supposing, nevertheless, that it would prove to be some common species of the south part of the state, which had found its way hither by ship or rail. After keeping my specimens nearly two years, and having meanwhile collected and published half a dozen new ones of the same genus, I lately made a careful examination of this my neglected ballast waif, and found that it was also an undescribed species. I immediately

named it as new, and sent a branch to Dr. Gray, who writes back that it is his unpublished *H. Wrightii*, which he has obtained from San Bernardino through Mr. W. G. Wright, only a year earlier than the date of my collecting it as a waif five hundred miles from its home. The seed, from which my waif specimen was produced, came probably by rail; for it was at the terminus of the railroad route that I found the plant.—EDWARD LEE GREENE, *Berkeley, California*.

### Botany at Harvard University.

The following brief notes, taken while spending the winter at the Botanic Gardens, will give the readers of the GAZETTE an idea of the nature and method of instruction given in this branch of Natural History at Harvard University.

Botany is one of the many *elective* studies which the whole course contains, so that all who begin it do not necessarily finish it. The course in elementary botany begins about October 1, and continues throughout the year. It consists, first, of practical exercises in analysis, by which means the student is made familiar with the process of determining plant names. This is done by analyzing, first some of the more common, regular, symmetrical flowers, and afterwards the irregular ones, such as some of the large *Compositæ*. Practical exercises are then given in the use of the analytical key, by which the student is made familiar with the process of tracing plants to their proper places in the Natural Orders. The next subject is to consider the different parts of the plants, following the plan given in Gray's Structural Botany.

Each student is required to work six hours a week in the laboratory, with a dissecting microscope. The last half of this course is devoted to the study of the Natural Orders and the useful plants which they contain, accompanied with the study of the most striking phenomena of vegetation.

At the beginning of the second year, the class take up the study of biology, pursuing a course rather more extensive than that given in Huxley's Elements of Biology; beginning with the lower Cryptogams, such as Bacteria, the different Moulds, etc.; passing to the higher forms, making a thorough study of the Ferns; finishing the first half with the study of Histology. During the second half year the class is given a thorough course in experimental vegetable physiology, and systematic botany. In this course, besides the collection and identification of plants, each student is furnished with a compound microscope, and is required to spend at least six hours a week, during the last half year, in laboratory practice, in the examination of important orders, giving results of experiment with the different apparatus at his command. The